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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/416,501 10/08/99 DOYLE

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EXAMINER

06T17.E

ART UNIT

PAPER NUMBER

2815

DATE MAILED:

10/11/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
09/416,501

Applicant(s)
Doyle

Examiner
Edgardo Ortiz

Art Unit
2815



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Jul 23, 2001
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 14 and 22-27 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 14 and 22-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☒ The proposed drawing correction filed on Jul 23, 2001 is: a) ☒ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892) 18) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 19) ☐ Notice of Informal Patent Application (PTO-152)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____ 20) ☐ Other: _____

Art Unit: 2815

DETAILED ACTION

This Office Action is in response to an amendment filed July 23, 2001 on which Applicant amended Claim 14 and canceled Claims 20-21.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 14 and 22-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The means and bounds of the claim are not clear in terms of the claimed "damaged surface" which is not a component of the final structure claimed by Applicant. The use of the damaged surface is merely an intermediate step towards the manufacture of the final structure claimed by Applicant.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371© of this title before the invention thereof by the applicant for patent.

Art Unit: 2815

Claims 14 and 23 are rejected under 35 § U.S.C. 102 (e) as being anticipated by Doyle et.al. (U.S. Patent No. 5,863,832). With regard to Claim 14, Doyle teaches a first substrate (250) with a semiconductor film formed thereon (222), wherein a bond between said semiconductor film and said first substrate is weakened by a hydrogen ion implanted damaged surface, said semiconductor film is demarcated from a rest of said first substrate by the hydrogen ion implanted damaged surface. See column 5, lines 50-64 and column 6, lines 1-8

With regard to Claim 23, Doyle teaches means for removing the damaged surface from the first substrate. See column 6, lines 2-3.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 22 is rejected under 35 § U.S.C. 103 (a) as being unpatentable over Doyle et.al. (U.S. Patent No. 5,863,832) in view of the acknowledged prior art figure 2 and the description thereof of pages 3-4 of the instant application disclosure. Doyle, as stated supra, essentially discloses the claimed invention but fails to show, a first level of transistors and a second level of transistors made of single crystal silicon disposed about a Z-dimension. The acknowledged prior art figure 2

Art Unit: 2815

teaches a first level of transistors (204) and a second level of transistors (208) disposed in a z-dimension. As disclosed on page 4, providing a second layer of transistors made of single crystal silicon has been known in the art. Therefore, it would have been an obvious modification to someone with ordinary skill in the art, at the time of the invention, to modify the structure as taught by Doyle to include a first level of transistors and a second level of transistors made of single crystal silicon disposed about a Z-dimension, as taught by acknowledged prior art figure 2 to improve the integration and bonding of semiconductor layers including transistors.

Claims 24-27 are rejected under 35 § U.S.C. 103 (a) as being unpatentable over Doyle et.al. (U.S. Patent No. 5,863,832) in view of the acknowledged prior art figure 2 and further in view of Chan et.al. (U.S. Patent No. 6,057,212). With regard to Claim 24, Doyle and Acknowledged Prior Art figure 2, as stated *supra*, essentially discloses the claimed invention but fails to show, a second substrate with a metal film formed thereon and bonded with the semiconductor film of the first substrate. Chan teaches a second substrate (1') with a metal film (5) formed thereon and bonded to a semiconductor film (3) of a first substrate (1), as seen on figure 1. Therefore, it would have been an obvious modification to someone with ordinary skill in the art, at the time of the invention, to modify the structure as taught by Doyle and acknowledged prior art figure 2 to include a second substrate with a metal film formed thereon and bonded with the semiconductor film of the first substrate, to provide a conducting layer bonded to an insulating layer and a

Art Unit: 2815

substrate that is not contaminating and can withstand processing temperatures and etching conditions.

With regard to Claim 25, a further difference between Doyle and acknowledged prior art figure 2 with the claimed invention is, metal film including a noble metal. Chan teaches a metal film (5) including tungsten which is a noble metal. Therefore, it would have been an obvious modification to someone with ordinary skill in the art, at the time of the invention, to modify the structure as taught by Doyle and acknowledged prior art figure 2 to include a metal film including a noble metal as taught by Chan, for its capacity to permit delamination of layers during a hydrogen process.

With regard to Claim 26, a further difference between Doyle and acknowledged prior art figure 2 with the claimed invention is, a first semiconductor film having a first oxide formed thereon. Chan teaches a first semiconductor film (3) having a first oxide (4) formed thereon, as seen on figure 1. Therefore, it would have been an obvious modification to someone with ordinary skill in the art, at the time of the invention, to modify the structure as taught by Doyle and acknowledged prior art figure 2 to include a first semiconductor film having a first oxide formed thereon as taught by Chan, to provide insulation to the semiconductor film.

Art Unit: 2815

With regard to Claim 27, a further difference between Doyle and acknowledged prior art figure 2 with the claimed invention is, metal film formed on a second oxide film formed on a second substrate. Chan teaches a metal film (5) formed on a second oxide film (6) formed on a second substrate (1'), as seen on figure 1. Therefore, it would have been an obvious modification to someone with ordinary skill in the art, at the time of the invention, to modify the structure as taught by Doyle and acknowledged prior art figure 2 to include a first semiconductor film having a first oxide formed thereon as taught by Chan, to attach a metal film to an insulating layer with negligible interface reaction.

Response to Arguments

4. Applicant's arguments with respect to claims 14 and 22-27 have been considered but are moot in view of the new ground(s) of rejection. In addition, in the amendment filed July 23, 2001, Applicant arguments as presented on pages 4 and 5 directed against *Horiba* are irrelevant, since no claim has been rejected by *Horiba* in the previous office action.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

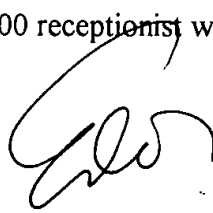
Art Unit: 2815

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Edgardo Ortiz (Art Unit 2815), whose telephone number is (703) 308-6183. In case the Examiner can not be reached by a direct telephone call, you might call Supervisor Eddie Lee at (703) 308-1690. Any inquiry of a general nature or relating to the status of this application should be directed to the Group 2800 receptionist whose telephone number is (703) 308-0956.

EO / AU 2815

10/5/01



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